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ABSTRACT

A study of the information gained by students in the process of taking a cloze test in English as a second language was conducted with 34 full-time undergraduate foreign students at a state university. The subjects came from a variety of native language backgrounds. A 35-item cloze test was developed in which every eighth word was deleted, beginning with the thirty-second word. Each deletion belonged to one of these structural categories: local (clues found within two words of the blank space), clause (clues found within the simple clause but beyond two words), subordinate sentence (clues found within the subordinate or main clause attached to the clause within which the blank appears), and same paragraph (clues found within the paragraph). The test was administered in a class period, and three weeks later, the intact version of the entire passage was given to the class to read, followed immediately by a second administration of the same cloze test. Exact-word scoring was used. Analysis of the pre-and post-test results showed a significant improvement in scores, but indicated that the location of clues had no significant effect on the responses. The results suggest that the structural categories of the deletions are not crucial in the linguistic processing of written text. (MSE)

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THE EFFECT OF STRUCTURAL CATEGORY DELETIONS ON
INFORMATION GAIN IN A CLOZE TEST

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ABSTRACT

A cloze test was given to a sample of foreign students. Later they read the intact passage and afterwards took the same cloze test again. Each deleted word was identified as belonging to one of four different structural categories which indicated where in the text the necessary clues for retrieving the deleted word could be found. The post-test scores were significantly higher than the pre-test scores, but the structural categories did not discriminate. Suggestions for future research are discussed.

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INTRODUCTION

Cloze scores are a direct measure of a text's redundancy because they are obtained by deleting words from the text and asking examinees to recover the deleted words. In this context, a text's redundancy refers to the degree to which the language in the text is predictable when only parts of it are known and are at hand. The rationale for using the cloze procedure to measure examinees' reading comprehension is that if they understand the structure and content of a text, then they will be able to utilize the redundancy in the text to recover the deleted words at a better-than-chance level.

There are two principal deletion schemes employed in constructing cloze tests: fixed-ratio and rational. With a fixed-ratio scheme the researcher deletes every nth word, e.g., seventh, while with a rational scheme the researcher chooses the words to be deleted in advance, e.g., content words or function words.

There has been considerable debate among cloze researchers as to whether all deletions in a cloze passage measure the same abilities. Until recently researchers assumed that examinees' item responses to function word deletions provided information about their understanding of the written text's structure while their item responses to content word deletions provided information about their comprehension of the written text's content.

A debate has now developed among cloze researchers as to

whether cloze items are sensitive to constraints beyond the boundaries of the sentence within which cloze items are found. Some researchers have offered empirical evidence that cloze items are sensitive to constraints beyond the sentence boundary, e.g., Bachman 1982, 1985; Brown, 1983; Cziko, 1978; Chavez-Oller, Chihara, Weaver, and Oller, 1985. Other researchers have shown that cloze items are only negligibly sensitive (or not at all) to constraints ranging bilaterally five to ten words from the deletion blank, e.g., Alderson, 1983; Porter, 1983; Shanahan, Kamil, and Tobin, 1982.

This paper addresses the issue of bilateral constraints, both intra- and intersentential, but the focus of the paper is on the effects of various constraints on information gain. Information gain refers to the new information that a text transmits to a reader during the reading comprehension process (Coleman and Miller, 1968; Harrison and Dolan, 1979).

When an examinee takes a cloze test, then studies the unutilized passage on which the cloze test was based, and later takes the same cloze test again, it is possible to measure the amount of new information that the passage transmits by subtracting the pre-test scores from the post-test scores. The distinction between old and new information implies that yet-to-be-read material contains two types of information. Examinees can predict old information in a text before reading it by using their knowledge of syntax, semantics, cohesion, and background information. New

information is that which is gleaned during the reading process and cannot be predicted in advance.

This research has three foci: to determine (1) whether the presentation condition would have a significant effect (the presentation condition refers to the pre-test and post-test, i.e., responses before and after reading the intact passage), (2) whether the structural category deletions would have a significant effect, and (3) whether there would be a significant interaction of the presentation condition by structural category deletions.

METHODOLOGY

Subjects. This study was conducted in the Department of Linguistics at Southern Illinois University. Thirty-four full-time undergraduate foreign students enrolled at Southern Illinois University served as unpaid volunteers for this project. The subjects were either freshmen or sophomores. Their native languages included Arabic, Brunei, Chinese, Greek, Korean, Malay, Spanish, Swedish, Thai, Urdu, and Yoruba.

To be admitted for full-time undergraduate study at Southern Illinois University, a foreign student must meet one of the following criteria: (1) have a Test of English as a Foreign Language score of 525 or higher, (2) pass the proficiency examination (a score of 70 or higher on the Michigan Test of English Language Proficiency and Aural Comprehension Test) and reading and writing examinations

of the Center for English as a Second Language, or (3) have completed 60 semester hours of collegiate training in an accredited United States college or university.

Materials. A thirty-five item cloze test was constructed for this research by deleting every eighth word beginning with the thirty-second word in the passage. The passage was 348 words long, and the topic was Finland's form of government. The first and last sentences were left unmutilated.

Each deletion was classified as belonging to one of the following structural categories described in Dieterich, Freeman, and Griffin (1978): (1) local--the clues for retrieving the deleted word were found in the immediate context of the blank; the clues were in the same clause as the blank and were no farther from it than two words on either side of the blank, (2) clause--the clues were contained in the same simple clause as the blank but were further away than the local clues, (3) subordinate sentence--the clause which contained the blank was a subordinate clause and the clues were contained in the main clause, or the main clause contained the blank, and its subordinate clause contained the clues, and (4) same paragraph--the clues for retrieving the deleted word were found in the same paragraph as the blank, and the examinee must have understood at least part of the content of the entire paragraph in order to retrieve the deleted word. The distribution of deletions was the following: local-ten; clause-eleven;

subordinate sentence-five; same paragraph-nine. Two researchers classified the deletions anonymously, and there was 84 percent agreement. In the cases where there was disagreement, a third rater adjudicated.

Readers allocate their attention to different types of linguistic structures during the reading process, and the aforementioned structural categories have had their importance established in previous research. The local category is associated with collocations and phrases. Schlesinger's (1969) research indicated that mature readers attend to phrases in their short-term, working memory. Kennedy (1967) reported that regressive eye movements take place within, not across, phrases. Goodman (1972) argued that the clause is the most significant language access to reading. More recent research indicates that information in larger blocks of discourse is comprehended, stored, and retrieved by means of schemata (Rumelhart, 1980).

Procedures. As a pre-test, the cloze was administered in class. Working time was forty minutes. Three weeks later, the examinees were given an unmutilated version of the entire passage to read and study for twenty minutes. The passages were collected, and fresh copy of the same cloze test was administered a second time; forty minutes was allotted for the test. The reading and the post-testing were conducted in class. Exact-word scoring was used to mark both the pre- and post-tests. No indication was given during

the pre-testing that the examinees would be tested again.

RESULTS AND DISCUSSION

(Put Figure 1 about here)

Figure 1 shows the percentages correct for the four structural categories under the two testing conditions, i.e., pre- and post-tests (the presentation condition).

The data were submitted to the two-way analysis of variance procedure. The presentation condition had a significant effect, $F(1,62)=19.03$, $p < .01$; the structural categories did not have a significant effect, $F(3,62)=0.35$; the interaction of the presentation condition by the structural categories did not have a significant effect, $F(3,62)=2.76$.

The examinees did significantly better on the post-test (65.55 percent correct) than on the pre-test (35.89 percent correct), but the location of the clues for retrieving the deleted words had no significant effect on the responses. On average, an examinee had no more difficulty in retrieving a word whose clues were no more than two words removed from the blank than in retrieving a word whose clues had to be gleaned by comprehending at least part of a paragraph. In this research it was not the case that some structural category deletions resulted in a greater loss of information than others; whatever differences there may have been were levelled out.

From this data set it is not possible to discern a pattern of strengths and weaknesses in the examinees' responses with regard to the structural categories investigated in this research. One is forced to conclude that these structural categories appear not to be crucial in the linguistic processing of written text because they did not discriminate.

On the other hand, Bachman (1985) has argued very eloquently and persuasively that deletions in a cloze passage measure different abilities, that not all words function at the same structural level, and that not all words carry the same amount of information. The task remains to find the structural categories that will discriminate in measures of information gain. Likely candidates include Bachman's (1982) syntactic, cohesive, and strategic categories in addition to pragmatic/semantic relations like relevance relationships between sentences, causation, and entailments.

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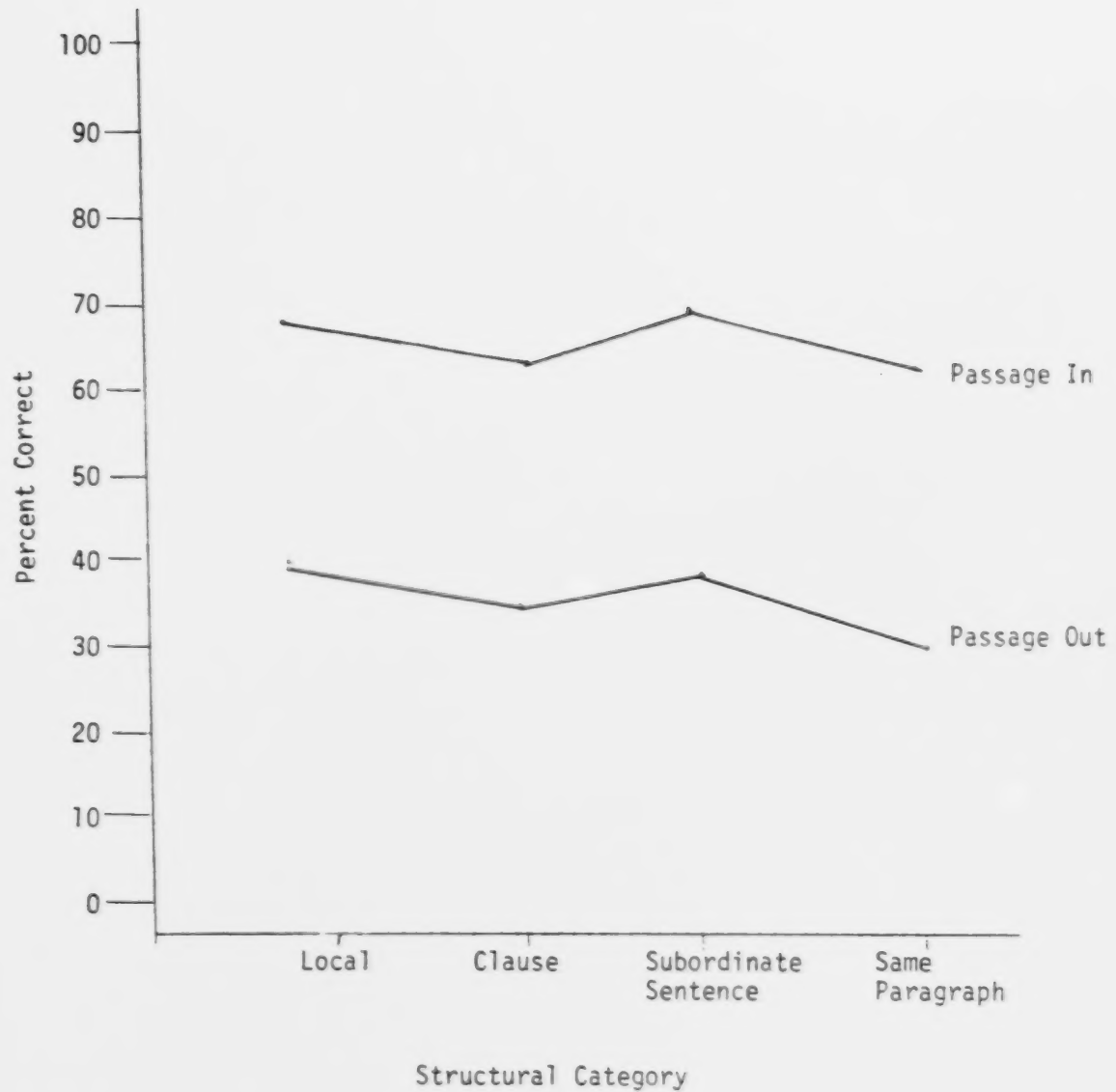
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FIGURE 1
Correct Percentages for the Different Structural
Categories under the two Presentation Conditions



Structural Categories

	Local n=10	Clause n=11	Subordinate Sentence n=5	Same Para n=9
Passage Out	40%	35.3%	39.4%	30.1%
Passage In	67.9%	65.2%	69.4%	60.8%